BLOOD CLOTTING

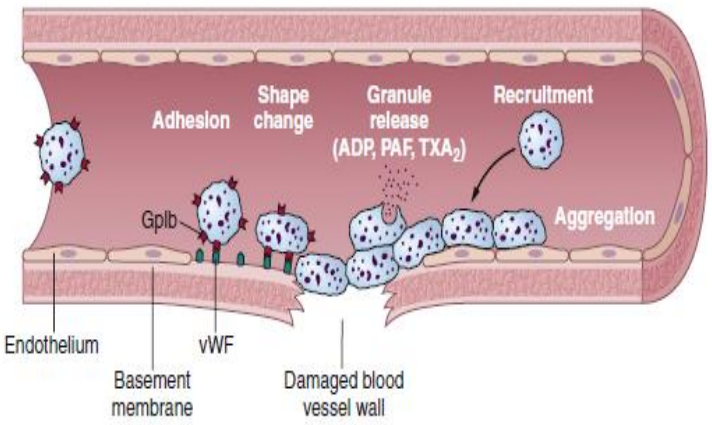


Image 1
Showing formation of platelet plug in severed blood vessel

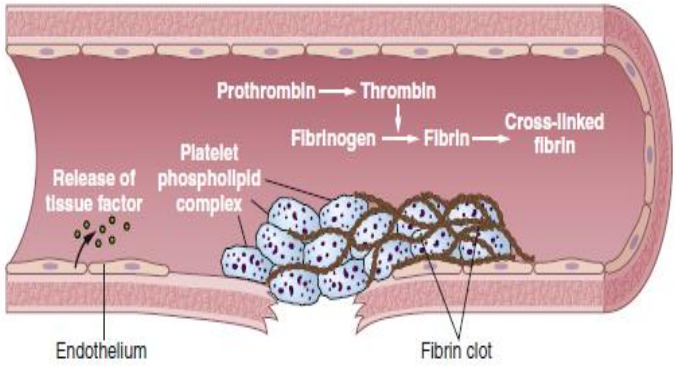


Image 2
Showing coagulation cascade after vascular injury

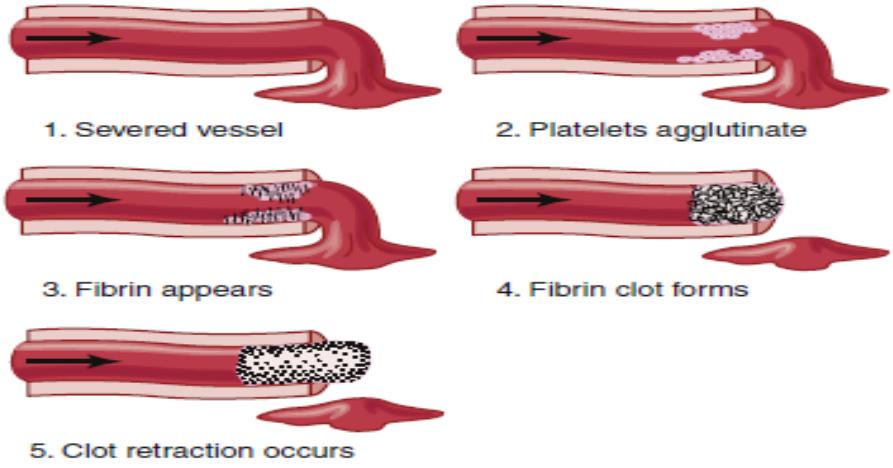


Image 3
Showing clotting process in a traumatized blood vessel

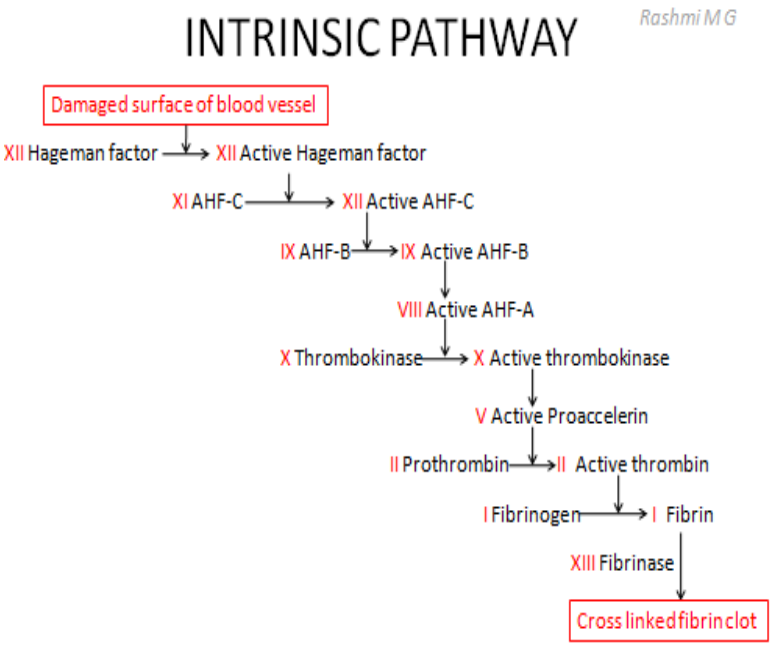
Blood clotting means coagulation of blood where transformation of blood (Liquid) into Solid Gel (Clot) by the formation of fibrin threads with the help of clotting factors (Calcium ions, inactive enzymes by hepatocytes, molecules associated with platelets/ released by damaged tissues

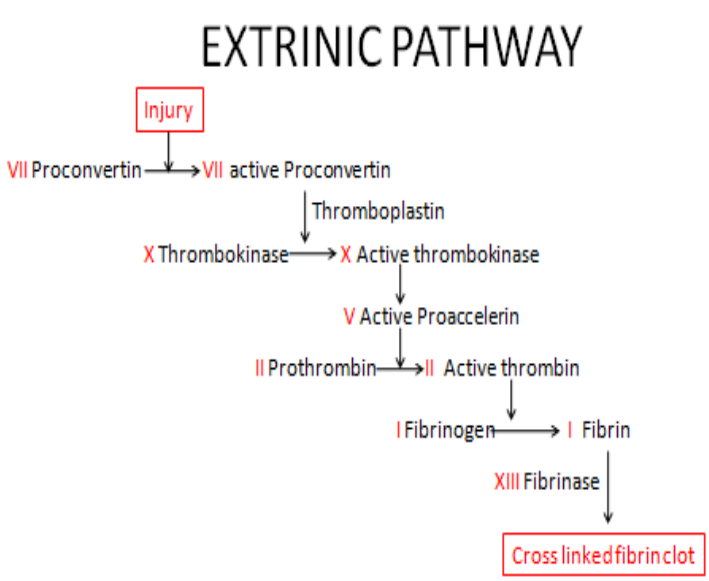
Main reaction: Soluble Fibrinogen ⟶ Insoluble Fibrin

Clotting cascade: There are majorly 2 pathways in clotting process namely, intrinsic pathway and extrinsic pathway

Intrinsic pathway	Extrinsic pathway
Long pathway	Short pathway
Slow process	Rapid process
Activators in direct contact with blood/ within blood	Activators is from cells outside the blood vessels
First reaction: Hageman factor ⟶ Active Hageman factor	First reaction: Proconvertin ⟶ Active Proconvertin

Rashmi M G





12 Clotting factors

FACTOR	SOURCE	DESCRIPTION
FACTOR I	LIVER	FIBRINOGEN
FACTOR II	LIVER	PROTHROMBIN
FACTOR III	DAMAGED TISSUE, PLATELETS	THROMBOPLASTIN
FACTOR IV	DIET, BONES, PLATELETS	CALCIUM IONS
FACTOR V	LIVER, PLATELETS	PROACCELEREIN
FACTOR VII	LIVER	PROCONVERTIN
FACTOR VIII	LIVER	ANTIHEMOPHILIC FACTOR- A
FACTOR IX	LIVER	ANTIHEMOPHILIC FACTOR- B
FACTOR X	LIVER	THROMBOKINASE
FACTOR XI	LIVER	ANTIHEMOPHILIC FACTOR-C
FACTOR XII	LIVER	ANTIHEMOPHILIC FACTOR-D
FACTOR XIII	LIVER, PLATELETS	FIBRINASE

Reference: John E Hall, Michael E Hall (2021), Guyton and Hall Textbook of Medical Physiology (14th Edition), Page no.478, 480